DIRECT RADIO-FREQUENCY DETECTION OF NUCLEOTIDE HYBRIDIZATION AT MICROELECTRODES

ABSTRACT OF THE DISCLOSURE

Radio-frequency (RF) excitation is used for direct detection of hybridization events at microelectrodes with surface-attached DNA oligomers. A homodyne reflectometer operates on a high frequency carrier to detect the presence of a low-frequency modulation signal. Without non-linearities in an interface, the modulation signal is not impressed upon the carrier signal. As such, the reflectometer can sensitively measure changes in dielectric properties without interference from other sources of capacitance/resistance unrelated to the reaction at the surface.